Amendments to the Claims

Please cancel claims 1-465 and 519-1690 without prejudice.

The following listing of claims will replace all prior versions and/or listings of claims in the application:

Listing of Claims:

1-465. (cancelled)

466. (original): A heater system, comprising:

an AC supply configured to provide AC at a frequency between about 100 Hz and about 1000 Hz;

an electrical conductor electrically coupled to the AC supply, wherein the electrical conductor comprises at least one electrically resistive section configured to provide an electrically resistive heat output during application of the AC to the electrically resistive section during use; and

wherein the electrical conductor comprises an electrically resistive ferromagnetic material and is configured to provide a reduced amount of heat above or near a selected temperature, and wherein the selected temperature is within about 50 °C of the Curie temperature of the ferromagnetic material.

467. (original): The heater system of claim 466, wherein the AC supply is coupled to a supply of line current, and wherein the AC supply is configured to provide AC at about three times the frequency of the line current.

468. (original): The heater system of claim 466, wherein the AC supply is configured to provide AC with a frequency between about 140 Hz and about 200 Hz.

469. (original): The heater system of claim 466, wherein AC supply is configured to provide AC with a frequency between about 400 Hz and about 550 Hz.

470. (original): The heater system of claim 466, wherein the heater system is configured to provide heat to a subsurface formation.

471. (original): The heater system of claim 466, wherein the heater system is configured to provide heat to a hydrocarbon containing formation, and wherein the heater system is configured to pyrolyze at least some hydrocarbons in the formation.

472. (original): The heater system of claim 466, wherein the heater system is configured to provide heat to contaminated soil, and wherein the heater system is configured to decontaminate at least a portion of the contaminated soil.

473. (original): The heater system of claim 466, wherein the heater system is configured to provide heat to at least a portion of an opening in a subsurface formation.

474. (original): The heater system of claim 466, wherein the ferromagnetic material comprises iron, nickel, chromium, cobalt, tungsten, or a mixture thereof.

475. (original): The heater system of claim 466, wherein a thickness of the ferromagnetic material is at least about ¾ of a skin depth of the AC at the Curie temperature of the ferromagnetic material.

476. (original): The heater system of claim 466, wherein the heat output below the selected temperature is greater than about 400 watts per meter of the electrical conductor.

477. (original): The heater system of claim 466, wherein at least a portion of at least one of the electrical conductors is configured to comprise a relatively flat AC resistance profile in a temperature range between about 100 °C and 750 °C.

478. (original): The heater system of claim 466, wherein at least a portion of at least one of the electrical conductors is longer than about 10 m.

479. (original): The heater system of claim 466, wherein the heater system is configured to sharply reduce the heat output at or near the selected temperature.

480. (original): The heater system of claim 466, wherein the heater system is configured such that the heat output of at least a portion of the system decreases at or near the selected temperature due to the Curie effect.

481. (original): The heater system of claim 466, wherein the system is configured to apply AC of at least about 70 amps to at least one of the electrically resistive sections.

482. (original): The heater system of claim 466, wherein at least one of the electrically resistive sections comprises a turndown ratio of at least about 2 to 1.

483. (original): The heater system of claim 466, wherein the heater system is configured to withstand operating temperatures of about 250 °C or above.

484. (original): The heater system of claim 466, wherein the electrical conductor is configured to automatically provide the reduced amount of heat above or near the selected temperature.

485. (original): A method of heating, comprising:

providing AC at a frequency between about 100 Hz and about 1000 Hz to an electrical conductor to provide an electrically resistive heat output, wherein the electrical conductor comprises at least one electrically resistive section; and

wherein at least one of the electrically resistive sections comprises an electrically resistive ferromagnetic material and provides a reduced amount of heat above or near a selected

temperature, and wherein the selected temperature is within about 50 °C of the Curie temperature of the ferromagnetic material.

486. (original): The method of claim 485, further comprising providing the AC to the electrical conductor when the electrical conductor is at or above the selected temperature.

487. (original): The method of claim 485, further comprising placing the electrical conductor in a wellbore in a subsurface formation.

488. (original): The method of claim 485, further comprising providing an initial electrically resistive heat output when the electrical conductor providing the heat output is at least about 50 °C below the selected temperature, and automatically providing the reduced amount of heat above or near the selected temperature.

489. (original): The method of claim 485, further comprising providing the AC at about three times the frequency of line current from an AC supply.

490. (original): The method of claim 485, further comprising providing the AC at a frequency between about 140 Hz and about 200 Hz.

491. (original): The method of claim 485, further comprising providing the AC at a frequency between about 400 Hz and about 550 Hz.

492. (original): The method of claim 485, further comprising providing the AC to the electrical conductor when the electrical conductor is at or above the selected temperature.

493. (original): The method of claim 485, further comprising allowing heat to transfer from at least one of the electrically resistive sections to at least a part of a subsurface formation.

494. (original): The method of claim 485, further comprising providing a relatively constant heat output when the ferromagnetic material is in a temperature range between about 100 °C and 750 °C.

495. (original): The method of claim 485, wherein an AC resistance of the electrical conductor decreases above the selected temperature to provide the reduced amount of heat.

496. (original): The method of claim 485, wherein a thickness of the ferromagnetic material is at least about ¾ of a skin depth of the AC at the Curie temperature of the ferromagnetic material.

497. (original): The method of claim 485, further comprising allowing heat to transfer from the electrical conductor to at least a part of a subsurface formation, wherein the subsurface formation comprises a hydrocarbon containing formation.

498. (original): The method of claim 485, further comprising allowing heat to transfer from the electrical conductor to at least a part of a hydrocarbon containing formation, and pyrolyzing at least some hydrocarbons in the formation.

499. (original): The method of claim 485, further comprising providing a reduced amount of heat above or near the selected temperature of less than about 400 watts per meter of length of the electrical conductor.

500. (original): The method of claim 485, further comprising controlling a skin depth in the electrical conductor by controlling a frequency of the AC applied to the electrical conductor.

501. (original): The method of claim 485, further comprising controlling the heat applied from the electrical conductor by allowing less heat to be applied from any part of the electrical conductor that is at or near the selected temperature.

502. (original): The method of claim 485, further comprising controlling the amount of current applied to the electrical conductor to control an amount of heat provided by at least one of the electrically resistive sections.

503. (original): The method of claim 485, further comprising applying current of at least about 70 amps to the electrical conductor.

504. (original): A heater system, comprising:

an AC supply configured to provide AC at a frequency between about 100 Hz and about 1000 Hz;

an electrical conductor electrically coupled to the AC supply, wherein the electrical conductor comprises at least one electrically resistive section configured to provide an electrically resistive heat output during application of the AC from the AC supply to the electrically resistive section during use; and

wherein the electrical conductor comprises an electrically resistive ferromagnetic material and is configured to provide a reduced amount of heat above or near a selected temperature that is about 20% or less of the heat output at about 50 °C below the selected temperature, and wherein the selected temperature is at or about the Curie temperature of the ferromagnetic material.

505. (original): The heater system of claim 504, wherein the AC supply is coupled to a supply of line current, and wherein the AC supply is configured to provide AC at about three times the frequency of the line current.

506. (original): The heater system of claim 504, wherein the frequency is between about 140 Hz and about 200 Hz.

507. (original): The heater system of claim 504, wherein the frequency is between about 400 Hz and about 550 Hz.

508. (original): The heater system of claim 504, wherein the heater system is configured to provide heat to a subsurface formation.

509. (original): The heater system of claim 504, wherein the heater system is configured to provide heat to a hydrocarbon containing formation, and wherein the heater system is configured to pyrolyze at least some hydrocarbons in the formation.

510. (original): The heater system of claim 504, wherein the heater system is configured to provide heat to at least a portion of an opening in a subsurface formation.

511. (original): The heater system of claim 504, wherein the ferromagnetic material comprises iron, nickel, chromium, cobalt, tungsten, or a mixture thereof.

512. (original): The heater system of claim 504, wherein a thickness of the ferromagnetic material is at least about ¾ of a skin depth of the AC at the Curie temperature of the ferromagnetic material.

513. (original): The heater system of claim 504, wherein the heat output below the selected temperature is greater than about 400 watts per meter of length of the electrical conductor.

514. (original): The heater system of claim 504, wherein at least a portion of at least one of the electrical conductors is configured to comprise a relatively flat AC resistance profile in a temperature range between about 100 °C and 750 °C.

515. (original): The heater system of claim 504, wherein the heater system is configured to sharply reduce the heat output at or near the selected temperature.

516. (original): The heater system of claim 504, wherein the system is configured to apply AC of at least about 70 amps to at least one of the electrically resistive sections.

517. (original): The heater system of claim 504, wherein at least one of the electrically resistive sections comprises a turndown ratio of at least about 2 to 1.

518. (original): The heater system of claim 504, wherein the electrical conductor is configured to automatically provide the reduced amount of heat above or near the selected temperature.

519-1690. (cancelled)